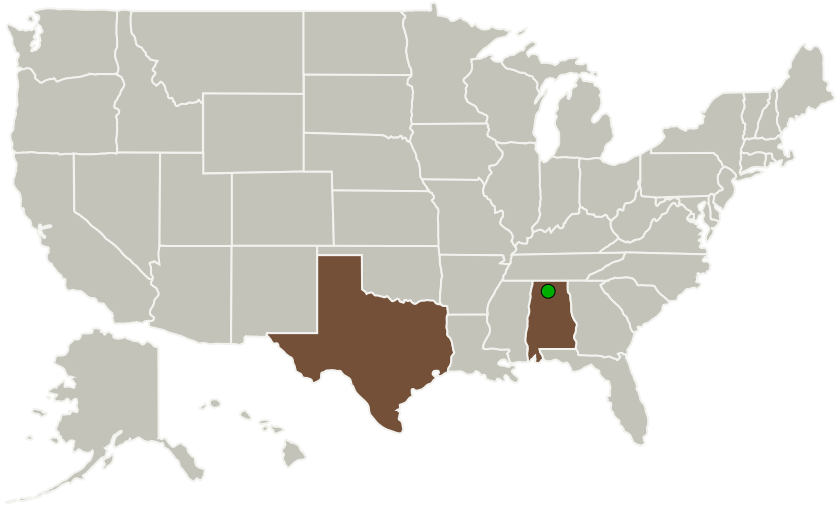
Advanced Oxidation Technology for Potable Water Disinfection, Phase I

Completed Technology Project (2011 - 2011)

Project Introduction

The availability of high-quality potable water is essential in crewed space missions. Closed loop water recycling systems as well as potable water holding tanks and waterlines provide environments for biofilm formation that can facilitate the growth of human pathogens, as well as organisms that can cause deterioration of distribution lines. Prevention requires the maintenance of a chemically stable and biologically effective residual concentration of biocide in water and wetted surfaces of the system. Current disinfection technologies in potable water systems for space applications utilize either iodine or silver biocide. Limitations exist in terms of incompatibility with some disinfection chemistries and surfaces, long-term health risk, rapid biocide depletion, and need for consumable supply and waste disposal. Lynntech proposes to develop an advanced disinfection system for water disinfection and biofilm prevention based on an on-demand biocide generator which does not require consumable chemicals. Excess disinfectant is decomposed on-demand into water and oxygen, representing zero toxicity for crew consumption of potable water. During the Phase I project, the effectiveness of the proposed system for potable water production will be demonstrated. During the Phase II project, an automated system will be developed and delivered to NASA.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Lynntech, Inc.	Lead Organization	Industry	College Station, Texas
Marshall Space Flight Center(MSFC)	Supporting Organization	NASA Center	Huntsville, Alabama

Primary U.S. Work Locations	
Alabama	Texas

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137967)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Lynntech, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

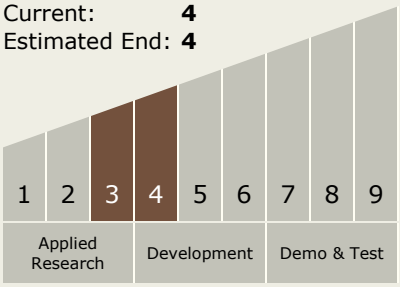
Carlos Torrez

Principal Investigator:

Anuncia Gonzalez-martin

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.1 Environmental Control & Life Support Systems (ECLSS) and Habitation Systems
    - TX06.1.2 Water Recovery and Management

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System